Date: Sat, 29 Oct 94 04:30:36 PDT
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: List
Subject: Ham-Homebrew Digest V94 #319
To: Ham-Homebrew

Ham-Homebrew Digest   Sat, 29 Oct 94   Volume 94 : Issue 319

Today's Topics:
HELP !!! - Kenwood Trio PS-30 Pwr Supply
Im-2-10Uh Inductor in 'resistor' package
Source of ferrite cores
Where does the power go? Part 2 (2 msgs)
Where does the power go? Part 3

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

Date: Thu, 27 Oct 94 12:29:55 PDT
From: Jimmie Holman <jholman@onramp.net>
Subject: HELP !!! - Kenwood Trio PS-30 Pwr Supply

Help !!!!
Got my ps-30 power supply open ....
it's putting out voltage .... the xciever works fine on receive .... but on
xmit the (xciever) lights dim

Need schematic or "where to specifically look

Thakns in advance

post here or email direct   jholman@onramp.net

Date: 27 Oct 1994 01:22:53 -0000
From: mike@io.org (Mike Stramba)
Subject: Im-2-10Uh Inductor in 'resistor' package

I bought a IM-2-10Uh inductor to experiment with in a tuning circuit.

This is the first time I've seen this type of inductor (in a 'resistor' like package).

What are they specfically designed for?

How do they compare to a toroid type inductor?

Mike

--
===
Mike Stramba   Email: mike@io.org
Toronto,Canada   Internex Online - Toronto, Canada (416) 363-3783
===

Date: Fri, 28 Oct 1994 15:41:48 GMT
From: dcc@dcs.ed.ac.uk (David Crooke)
Subject: Source of ferrite cores

My father (GM0RHP) is looking for a source of 4" long by 1/4" dia. ferrite core rods to build some fancy antenna. The only source he knows of is in California, USA - is there anywhere closer or am I best to just order them on plastic and have them pop them in the post in a jiffy bag?

Dave

--
David Crooke, Department of Computer Science, University of Edinburgh
Janet dcc@ed.dcs : Internet dcc@dcs.ed.ac.uk : IP talk dcc@129.215.160.29
Work: JCMB Rm 1408, King's Bldgs, W Mains Rd., Edinburgh EH9 3JZ. 0131 650 5164
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Date: Fri, 28 Oct 1994 16:30:23 GMT
From: jeroen@dxcern.cern.ch (Jeroen Belleman)
Subject: Where does the power go? Part 2

In article <9409267832.AA783201194@mails.imed.com>,
 <mack@mails.imed.COM> wrote:
>
>Build an amplifier using a MAR-4 MMIC.   This is a small transmitter that should

>have a 50 Ohm output impedance and be capable of 20 mW of output...

The confusion about input and output impedance of RF amps prompted me to perform the experiment proposed, although using a MAR-7 rather than a MAR-4.

It *does* have a 50 Ohm impedance looking back into the output.

As others have pointed out however, this is not commonly the case for transmitters. Those have been designed to drive a 50 Ohm load, which says nothing about the impedance you'd see looking back into the output.

The same problem exists with filters. If you have, say, a low-pass filter designed for an infinite source resistance and a 50 Ohm load, what's the load seen by the source? Surely not infinity. In fact, you'd see the 50 Ohm load below cut-off, and something approaching a short circuit beyond.

I really think we should get our terminology cleaned up.

Best regards,
Jeroen Belleman
jeroen@dxcern.cern.ch

Date: 28 Oct 1994 12:01:34 GMT
From: moritz@ipers1.e-technik.uni-stuttgart.de ()
Subject: Where does the power go? Part 2

>An easier experiment would be to take an average 100w transmitter, back it
>down to minimum output into a 50 ohm coax section with a dummy load. Measure
>the forward power with a 50 ohm dummy load and measure the forward power with
>a 100 ohm dummy load.

Cecil,

Although the discussion gets beyond the intentions of the initial posting, I should like to continue..

I thought of the same experiment, than again we all know that foreward power readings change under mismatch.
Now, if you use a well defined 100 Ohms load and different known lengths of line (low loss) between TX and the load,
and the meter is nice and accurate (the difference of two inaccurate values is more inaccurate), it should be possible to work out exactly how much and at what phase power is reflected from the TRX.

73, Moritz

Date: 28 Oct 94 18:42:58 GMT
From: mack@mails.imed.COM
Subject: Where does the power go? Part 3

Many thanks for the many helpful suggestions. I had intended to take into account the fact that a MAR4is only NOMINALLY 50 Ohms out by finding a frequency at which it IS 50 Ohms. I wasn't explicit on this point. Several correctly pointed out that this experiment only covers the case of what happens to a trasmitter which has a nominal 50 Ohm output. This thread started because of an experiment where the tx end of the line was terminated by a tuner. I'll add that experiment.

Again, thanks for the comments.

Ra Mack
WD5IFS
mack@mails.imed.com

Date: 28 Oct 1994 17:54:57 +0200
From: k23690@proffa.cc.tut.fi (Kein{nen Paul)

References<1994Oct20.151732.17084@gov.nt.ca>
<1994Oct21.124047.22331@ke4zv.atl.ga.us>, <Cy6t87.D54@cruzio.com>
Subject: Re: Paralleling amplifiers

Stan Goldstein N6ULU (stan@cruzio.com) wrote:

> > >I have several identical 2m amplifiers. Could anyone tell me how
> > >feasable it would be to operate them in parallel using phasing cables
> > >on the inputs and outputs similar to phasing two antennas?

> Why can't you avoid the problem on the output side by feeding 2 separate
> antennas?

This should work fine if you are using dipoles (or short yagis) with a broad radiation angle. A phase error of a few degrees would only shift the combined radiation pattern with a few degrees, which can be compensated by turning mechanically by a few degrees.

However, if very narrow beam antennas are used, the phase error must be

kept so low that the peak of the combined radiation pattern is within the radiation pattern of an individual antenna. In this case, it makes more sense to use Wilkinson combiners and splitters as quite a lot of differential phase shift is required until it will cause even 0.5 dB loss and the radiation pattern is only affected by the power divider at the antennas.

If the power amplifiers are are designed for narrow band operation with a lot of high-Q band-pass sections, there is going to be a lot of (differential) phase variations near the operating frequency due to component tolerances. If more wide band amplifiers are used with only low-pass filtering to reduce harmonics, the risk for differential phase response is smaller (and the amplifier efficiency is lower).

Paul OH3LWR

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X.400   : G=Paul S=Keinanen O=Kotiposti A=ELISA C=FI
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Date: 27 Oct 1994 15:46:47 GMT
From: jfw@ksr.com (John F. Woods)

References<9409247830.AA783016585@mails.imed.com> <38i6cd$1c5@chnews.intel.com>,
<38it15$661@usenet.rpi.edu>
Subject: Re: Where does the power go?

lascal@magritte.its.rpi.edu (Lance Lascari WS2B) writes:
>Cecil_A_Moore@ccm.ch.intel.com wrote:
>: In article <9409247830.AA783016585@mails.imed.com>,
>: <mack@mails.imed.COM> wrote:
>: > Since the Transmitter impedance matches the impedance
>: >of the coax, no energy is sent back to the load. >Ray Mack >WD5IFS
>: Hi Ray, If the transmitter impedance is 50 ohms and the load is 50 ohms,
>: then a 100w input transmitter will deliver no more than 50w to the load.
>: Yet we know that a 100w input class C amplifier will deliver much more
>: than 50w to the load. How do you explain that?
>   The full power is being transferred, however the voltage does
>drop across the load, by 3db.

Thank you for playing, but this was a trick question. The correct answer is: the transmitter impedance is _not_ 50 ohms. Someone else on this thread nicely explained loadline impedance, so I'll attack it from the other end:

In an ideal class C amplifier, the active element is either fully off or fully on. When it is fully off, its impedance is (of course) infinite; when it is fully on, its impedance is 0. When is its impedance 50 ohms?

That's another trick question, as I hope you realized; the answer is "never". No, the output matching network does not translate the active element's impedance to 50 ohms -- *which* impedance is it translating to 50 ohms, infinity or zero?

What you are thinking of is a "signal generator", which is a device that actually has an analytical output impedance*. For a good discussion of the difference between a "signal generator" and a "transmitter", get a copy of Walt Maxwell's book "Reflections".

73, John, WB7EEL/1

* Note that one can (and often does) make a signal generator by taking a transmitter and following it with a resistive pad (T or pi), whose sole purpose is to enforce the 50-ohm source impedance regardless of the actual instantaneous impedance of the actual transmitter.

Date: 28 Oct 1994 17:55:51 +0200
From: k23690@proffa.cc.tut.fi (Kein{nen Paul)

References<1994Oct25.151508.2124@ke4zv.atl.ga.us>
<1994Oct25.202927.19602@arrl.org>, <1994Oct26.142010.6829@ke4zv.atl.ga.us>
Subject: Re: Paralleling amplifiers

Zack Lau (KH6CP) (zlau@arrl.org) wrote:

> This might be interesting for 432 EME. Back of the envelope
> calculations indicate that four sets of 100 watt bricks/0.3 dB NF
> preamps/FO-22 yagis (all mast mounted) ought to hear echoes
> quite well. There is a big gain is on receive from eliminating
> phasing line losses ahead of the preamp. An advantage of this system
> would be that RG-213/U could be used for all the coax runs. And,
> if you are homebrewing everything, it isn't necessarily four
> times more expensive to build 4 amps/preamps/antennas.

Gary Coffman (gary@ke4zv.atl.ga.us) wrote:

> My only problem with this approach is that it's unlikely the power
> amps and the preamps will have the same phase response. Thus a
> phasing network that works in one direction won't work in the other.
> If you can tweak each amp/preamp to have the same phase response,

> then it ought to work fine.

If you can afford 4 amps/preamps/antennas, you probably can afford separate RG-213/U coax runs and combiners for receive and transmit. You can then separately tweak the phase response for amps and preamps so that the radiation pattern will coincide with each other and hopefully with the radiation patterns of each antenna.

If the array is also used for terrestrial communication, it might be quite challenging to tweak the amps high above tree tops :-)

Paul OH3LWR

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X.400   : G=Paul S=Keinanen O=Kotiposti A=ELISA C=FI

Date: 28 Oct 1994 13:34:23 -0000
From: agodwin@acorn.co.uk (Adrian Godwin)

References<38hoc0$sr0@cat.cis.Brown.EDU> <38hv7i$mka@charm.magnus.acs.ohio-st,
<38i384$mr3@charm.magnus.acs.ohio-state.edu>
Subject: Re: Q: Al heatsinks and black paint.

In article <38i384$mr3@charm.magnus.acs.ohio-state.edu>,
Steve Bertsch <sbertsch@magnus.acs.ohio-state.edu> wrote:
>I looked up the reference on heat sinks in National Semiconductor's
>_Voltage Regulator Hankbook_ (c)1982.
>
>---------------snip 'n' save--------------------
>

(I did)

However, heatsinks don't only lose heat by radiation - they also conduct it to air, circulated either forcibly or by convection.

I don't know what the relative heat losses by various methods are, but I suspect the emissivity doesn't tell the whole story - improving emissivity by a factor of 15 probably doesn't reduce the thermal resistance by the same order (especially if some of the emitting surfaces face each other - black surfaces absorb more radiation, too).

-adrian

End of Ham-Homebrew Digest V94 #319
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